

Second Edition

# Wood and Traditional Woodworking in Japan

MECHTILD MERTZ



KAISEISHA PRESS



Second Edition

## Wood and Traditional Woodworking in Japan

MECHTILD MERTZ

Drawing on in-depth interviews with a wide variety of traditional craftsmen, ethnobotanist and wood anatomist Mectild Mertz offers illuminating insights into the technical and symbolic properties of Japanese wood. With a first-ever multi-lingual glossary of woodworking terms and an appendix of Japanese timber names, *Wood and Traditional Woodworking in Japan* is certain to become an invaluable resource for woodworkers, art historians, ethnobotanists, archaeologists, and lay people alike.



"Mertz has done an outstanding job of collating an enormous amount of data into a concise and clean format . . . this is an excellent and long-overdue reference book that I would heartily recommend to anyone keen to know more about Japan's culture of wood."

Douglas Woodruff, "Kyoto Journal"



KAISEISHA PRESS

Second Edition  
Wood and Traditional Woodworking in Japan

Mechtild Mertz

KAISEISHA PRESS

© 2011, 2016 by Mechtild Mertz

All rights reserved. First edition 2011.

Second edition 2016.

Printed in Japan

ISBN978-4-86099-323-8



**KAISEISHA PRESS**

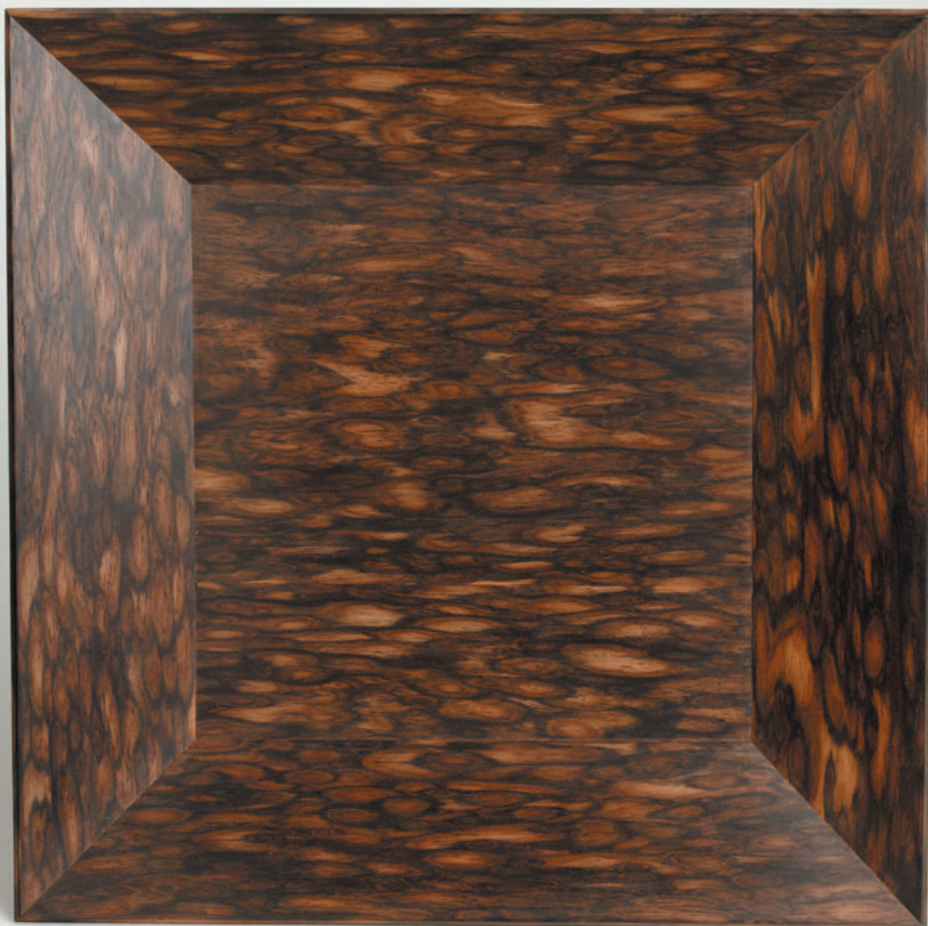
2-16-4 Hiyoshidai, Otsu City, Shiga Prefecture 520-0112, JAPAN

Tel: +81-77-577-2677

Fax: +81-77-577-2688

<http://www.kaiseisha-press.ne.jp>

Unless otherwise acknowledged, photographs were taken by the author.



Impressive *kujaku* (“peacock”) figuring on a *kaki* persimmon tray.  
(Photo by Cyril Ruoso.)

Length 22.5 cm, width 22.5 cm, height 3.3 cm.



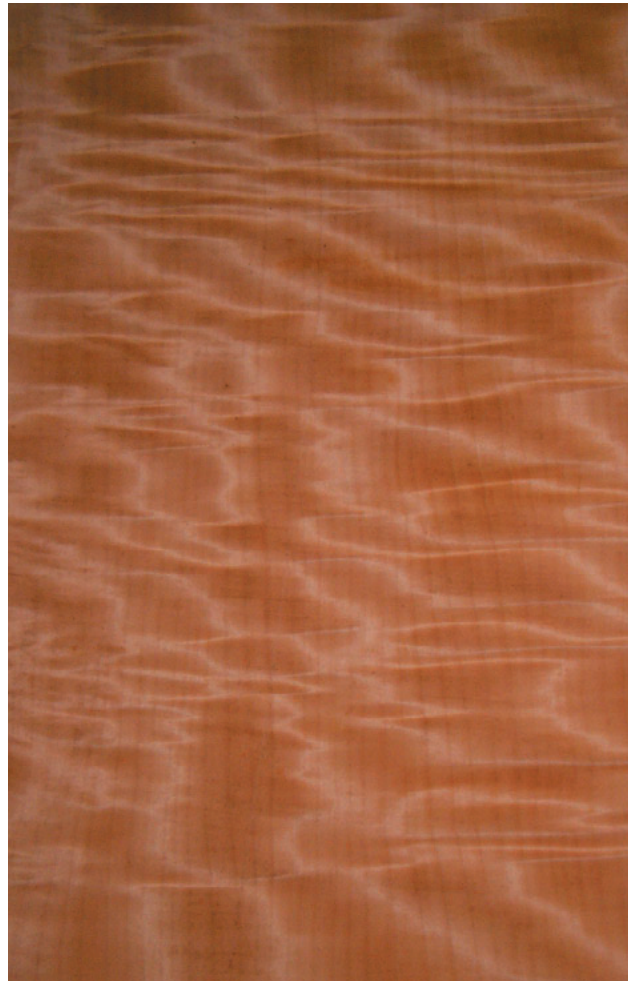


Left: *Kiso-hinoki* cypress forest.  
Center: *Akita-sugi* cedar forest.  
Right: *Aomori-hiba* forest. (Photo by Yumoto Takakazu.)



Cooked-rice container lid with an expressive *Akita-sugi* cedar straight grain.  
Diameter 17 cm. By Shibata Yoshinobu.  
(Photo by Cyril Ruoso.)





Top left: Japanese zelkova (*keyaki*) with *tama* ("pearl") figuring.

Top right: Japanese horse-chestnut (*tochinoki*) with *chijimi* ("crepe") figuring.

Left: Deciduous oak (*nara*) with *torafu* ("tiger fleck") figuring showing medullar rays.



Right: *Chôna*, curved-handled adze, and Nara-Period hinoki cypress board bearing traces of *chôna* fashioning.





a



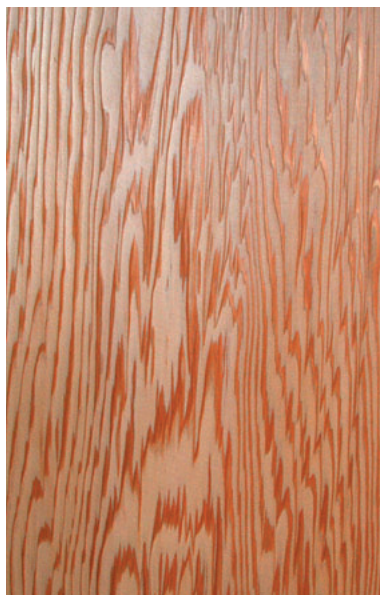
b



c



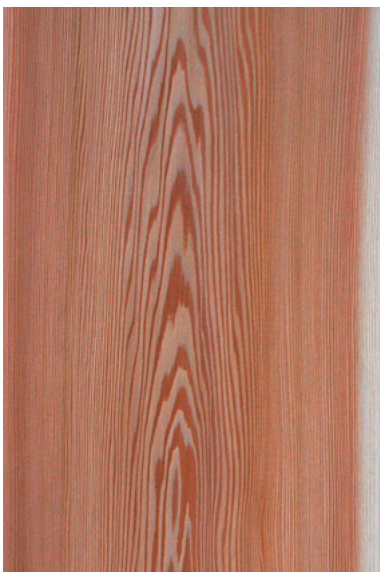
d



e



f



g

- a: *Naka-itame* ("central flat-sawn grain") on an *Akita-sugi* cedar ceiling panel.
- b: *Naka* ("central") figuring on a *Yoshino-sugi* cedar ceiling panel.
- c: *Sasa* ("bamboo grass") figuring on a *Yaku-sugi* cedar ceiling panel.
- d: Vivid-red grain on a *Tosa* (or *Yanase*) *sugi* cedar ceiling panel.
- e: *Sasa* ("bamboo grass") figuring on a *Kirishima-sugi* cedar ceiling panel.
- f: The earlywood of this *Kasuga-sugi* cedar ceiling panel is characterized by a reddish tone.
- g: Red and white "Genpei" figuring on an *Akita-sugi* cedar ceiling panel.

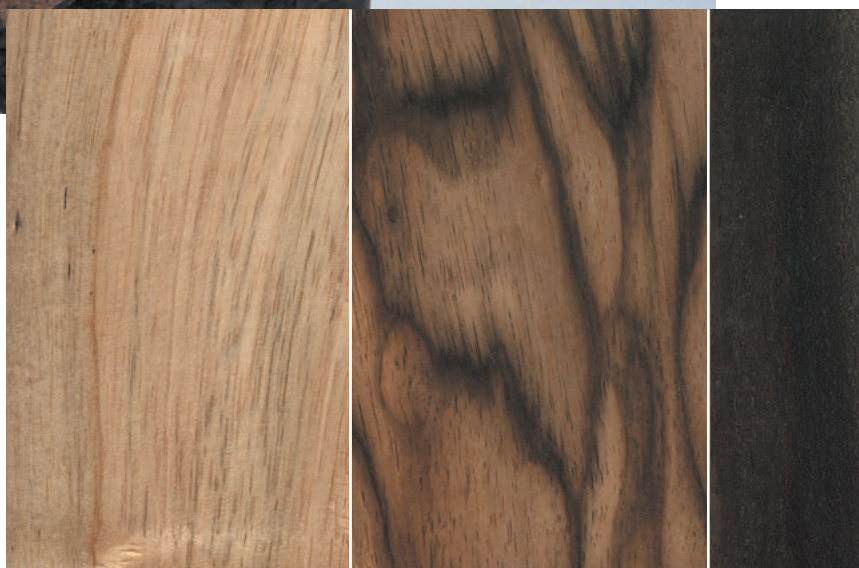
(Photos a-g taken by author, with permission of proprietor Nakade Takashi of Izugen Meiboku.)





End grain of a *kurogaki* black persimmon stem.

Three aspects of *kakinoki*, persimmon wood. Left: natural coloring. Center: *shimagaki*, striped persimmon. Right: *kurogaki*, black persimmon.



“Wild geese and moon” incense container made of striped persimmon with white inlay. Length 9.5 cm, width 3.7 cm, height 2.5 cm. By Iguchi Akio.  
(Photo by Cyril Ruoso.)







Top left: Kijima Toshio, of Gifu Prefecture's Nagiso Town, splitting a hinoki cypress board.

Top right: Using a spear-headed plane in the reconstruction of the Yakushi-ji Lecture Hall.

Above: Using an *uzukuri* brush to finish a Japanese cedar surface.

Right: Ayabe Yuki preparing to do object-orientated cutting (*kidori*) on a keyaki plank.





Top: Ayabe Yuki fashioning a bowl on a *rokuro*, or lathe.



Left: Eri Kôkei carving the hermit *Hôdô*, founder of Ichijô Temple.  
(Photo by Kimura Naotatsu.)

Bottom: Shirai Masaharu using cherry-bark strips to sew together the ends of a bentwork ring.







Left: *Koematsu* ("fatty pine") incense container.  
Diameter 6.8 cm, height 1.8 cm.  
By Ayabe Yuki.

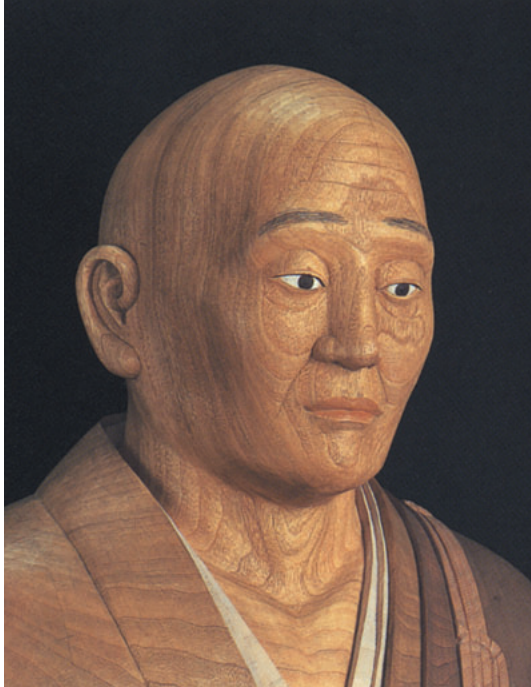
Center left: Incense container made of *tsubaki*  
(Japanese camellia).  
Height 6.4 cm, diameter 5.7 cm.

Center right: Hearth frame made from the wood of  
an old apricot tree (*ume-koboku*).  
Height 6.6 cm, length 42.4 cm, width 42.4 cm.  
By Inao Seichūsai.  
(© Nihon Tokushu Printing.)



*Chashaku* (tea scoops). Top to bottom: *nanten* (heavenly bamboo), *yamazakura* (cherry wood), *tsubaki* (camellia),  
and *kuwa* (mulberry). Length 18 cm, width 1–1.1 cm, thickness 0.2–0.4 cm. By Ayabe Yuki.





Top left: The subdued straight grain of Bishû hinoki cypress is well-suited for this *Jizô bosatsu* image.  
Top right: Camphor wood's more vivid flat-sawn grain is suitable for this statue of a priest.  
By Eri Kôkei. (Photos by Kimura Naotatsu.)

Left: Stages in the creation of a *Nô* mask.  
By Nagasawa Muneharu.

Bottom left: Pentagonal tray made of dark brown, *ishibai*-treated mulberry wood.  
By Kawamoto Kôshun. (© Nihon Tokushu Printing.)

Bottom right: Japanese nutmeg (*kaya*) *Go*-board with a *tenchi-masa* "heaven and earth" straight grain.  
By Kuroda Makoto [Rozan, *pseud.*], Nagoya.



## **Foreword by Yumoto Takakazu**

The Japanese archipelago extends over 3,000 kilometers from north to south and is comprised of subarctic, cool-temperate, warm-temperate, and subtropical climatic zones. It is evident that these various climatic zones have persisted over the past 100,000 years, in spite of the global environmental changes that have occurred. As a result, the Japanese archipelago's natural environment and its human subsistence activities have been characterized by great variety, as have its human-nature relationships.

From 2006 to 2011, a collective research project entitled "A New Cultural and Historical Exploration into Human-Nature Relationships in the Japanese Archipelago" was conducted at the Research Institute for Humanity and Nature. Involving more than 130 researchers, including ecologists, anthropologists, geographers, historians, and archeologists, this project's aim was to reconstruct how human-nature relations have changed, both physically and spiritually, over the course of Japanese history.

Traditional woodcraft is a typical example of a human-nature relationship, one that boasts a long history. It was for this reason that Dr. Mechtild Mertz decided to undertake a study of Japanese wood craftsmanship. Based on in-depth interviews of craftsmen who specialise in various fields of traditional woodworking, her study's distinctive feature is that it combines a craftman's know-how with a scientist's understanding of wood anatomy. As such, this study offers art historians, ethnobotanists, archaeologists, and Japanologists novel tools and methods to supplement their existing ones and contributes greatly towards opening a new field of research.

Yumoto Takakazu

Project Leader, Professor

Research Institute for Humanity and Nature, Kyôto



## Foreword by Itoh Takao

It gives me great pleasure to learn of the Kaiseisha Press publication of Dr. Mechtild Mertz's book.

It was in 1999, while I was a professor at the Wood Research Institute in Uji (Kyôto Prefecture, Japan) that she contacted me and expressed a desire to conduct research in my laboratory on traditional Japanese woodworking.

Just after she joined my laboratory, we decided that the best way of conducting this research would be to visit the ateliers of various traditional woodworkers and to conduct interviews. We submitted a questionnaire to some thirty-five workshops in the Tôhoku, Kantô, Chûbû, and Kinki regions and taped these interviews. We also interviewed craftsmen from other wood-related fields, such as lacquer ware and carpentry.

Fortunately, the woodworkers were very cooperative and willingly gave of their time and energy in answering our questions. These interviews greatly enhanced Dr. Mertz's understanding of the activities of traditional Japanese woodworkers.

Our first trip, in 1999, took us to Hirutani (Eigenji-chô, Shiga Prefecture), which is considered to be the birthplace of Japanese turnery. Dr. Mertz painstakingly took notes and pictures of the craftsmen's work. She proved to have an excellent eye for detail, observing, for example, that the varying widths of the annual rings in some *sugi* (Japanese cedar) bentwork possessed a natural beauty of their own.

The interview tapes and their transcriptions provided the principal source of information for her doctoral thesis. Through them, she came to appreciate just how Japanese woodworkers bring out, by careful selection of wood species and by the use of appropriate techniques, the intrinsic beauty of the wood in their final products.

Although she knew Japanese before joining us, it was not always easy for her to fully understand the interviewees, as many of them were quite aged and spoke in their regional dialects, some of which are difficult for even native Japanese speakers to comprehend. However, Dr. Mertz, a native German speaker enrolled in a French research institute and translating from Japanese into English, persevered and overcame the linguistic challenges. After four years of profound effort, she succeeded in completing her doctoral thesis.

Of all the traditional wooden craft items in Japan, those preserved in the Shôsô-in Imperial Repository represent the ultimate in refinement. Thanks to the skills of the traditional woodworkers who made them, the techniques responsible for their creation, as well as their designs, will endure. I hope this publication will contribute to a greater appreciation of the significance of traditional Japanese woodworking.

Itoh Takao

Professor Emeritus, Kyôto University

Visiting Researcher, Nara National Research Institute for Cultural Properties

## Preface to the second edition

On the occasion of the second edition of *Wood and Traditional Woodworking in Japan*, I wish to thank those who pointed out errors and discrepancies in the original edition. The present book has benefited greatly from their kind advice.

I would also like to take this opportunity to announce the impending publication of the Japanese edition of *Wood and Traditional Woodworking in Japan*. Thanks to Hayashi Yumiko's excellent translation, Japanese woodworkers and fans of Japanese wood and woodcraft will soon be able to enjoy reading about their country's fascinating 'wood culture' in their own language.

Mechtild Mertz



# Contents

Foreword by Yumoto Takakazu .....	i
Foreword by Itoh Takao .....	ii
Preface to the Second Edition .....	iii
Acknowledgements .....	1
Notes on typography, chronological table, prefectures and regions of Japan .....	4
INTRODUCTION.....	7
<b>1. WOOD BASICS .....</b>	<b>21</b>
<b>1.1. Nomenclature of Trees and Timbers .....</b>	<b>21</b>
1.1.1. Botanical names.....	22
1.1.2. Vernacular names.....	25
1.1.3. Timber names.....	27
<b>1.2. Wood Structure.....</b>	<b>29</b>
1.2.1. Gross structure of the tree.....	29
1.2.2. Structure of the stem.....	29
1.2.3. Microscopic structure of wood.....	31
<b>1.3. Wood Sections .....</b>	<b>32</b>
1.3.1. Transversal section.....	32
1.3.2. Tangential section.....	33
1.3.3. Radial section.....	33
1.3.4. Wood figuring.....	34
<b>1.4. Wood Surface.....</b>	<b>35</b>
1.4.1. Grain .....	35
1.4.2. Texture .....	36
1.4.3. Colour.....	36
<b>1.5. Wood Properties .....</b>	<b>36</b>
1.5.1. Density.....	38
1.5.2. Average shrinkage .....	38
1.5.3. Seasoning.....	39
1.5.4. Durability.....	40
1.5.5. Cleavability.....	40
<b>2. TRADITIONAL WOODWORKING IN JAPAN .....</b>	<b>41</b>
2.1. <i>Sashimono</i> , Fine Cabinetmaking/Joinery .....	46
2.2. <i>Horimono/chôkoku</i> , Carving/Sculpture .....	53
2.3. <i>Hikimono</i> , Turning .....	58

2.4. <i>Magemono</i> , Bentwork .....	64
2.5. <i>Daiku</i> , Carpentry .....	70
3. WOODWORKERS AND WOOD NOMENCLATURE .....	75
3.1. Japanese Timber Names .....	75
3.1.1. Wood names with an area-related prefix.....	76
3.1.2. Wood names with a characteristic-related prefix.....	80
3.1.3. Wood names with an age-related prefix .....	81
3.1.4. Abbreviated wood names.....	81
3.1.5. Wood names with prefixes denoting foreign wood .....	82
3.2. Tree and Timber Group Names.....	83
3.2.1. Grouping of trees.....	83
a. <i>Zôki/zatsuboku</i> , common or miscellaneous trees.....	83
b. <i>Kiso go-boku</i> , “Five trees of Kiso” .....	84
c. Sacred trees .....	85
3.2.2. Timber groupings.....	85
a. Softwoods and hardwoods.....	85
b. <i>Meiboku</i> , superior-quality wood.....	85
c. Bogwood .....	86
d. Wood for Buddhist sculptures.....	86
e. <i>Karaki</i> , Chinawood, and Japanese wood .....	86
f. <i>Akamono</i> , red wood.....	87
3.3. Timber Classifications Used by Craftsmen.....	87
4. TECHNICAL ASPECTS OF TRADITIONAL WOODWORKING .....	93
4.1. The Choice of Timber .....	93
4.2. Seasoning Wood.....	101
4.3. <i>Kidori</i> , Object-Oriented Cutting.....	108
5. CULTURAL ASPECTS OF TRADITIONAL WOODWORKING .....	117
5.1. Preference for Indigenous Wood .....	117
5.1.1. Earlywood and latewood.....	117
5.1.2. Aesthetic aspects of Japanese and foreign wood .....	118
5.1.3. Chinawood in Japan.....	119
5.1.4. A different approach to indigenous wood.....	120
5.2. Sacred Aspects of Wood .....	120
5.2.1. Felling a tree .....	120
5.2.2. Timber for a Buddhist or <i>Shintô</i> image .....	122
5.2.3. “First strike of the chisel” ritual.....	124
5.2.4. The “soul” of an image .....	125
5.2.5. Objects created for shrines and temples.....	125
5.2.6. Construction ceremonies.....	126
5.3. Symbolic Associations .....	128
5.3.1. The <i>Shôsô-in</i> as a source of inspiration .....	128
5.3.2. Taking inspiration from <i>Katsura rikyû</i> .....	130
5.3.3. The “Genpei War” example .....	132
6. AESTHETIC ASPECTS OF TRADITIONAL WOODWORKING .....	135
6.1. A Comprehensive and Broad Perception of the Beauty of Wood.....	136



---

6.1.1. Grain and figuring.....	136
6.1.2. Colours.....	144
6.1.3. Texture and weight.....	148
<b>6.2. Techniques for Enhancing the Beauty of Wood.....</b>	<b>150</b>
6.2.1. Final carving techniques.....	150
6.2.2. Finishing and coating techniques.....	154
<b>6.3. The Quiet Beauty of Wood in the Tea Ceremony.....</b>	<b>159</b>
<b>6.4. Beauty and Beyond .....</b>	<b>162</b>
<b>CONCLUDING REMARKS .....</b>	<b>163</b>
<b>Bibliography .....</b>	<b>165</b>
<b>Appendices .....</b>	<b>175</b>
Appendix 1 Names, Sizes, and Distributions of Japanese Timber, Trees, and Plants.....	177
Appendix 2 Scientific Names of Tree and Plant Species Mentioned in the Text .....	198
Appendix 3 Physical and Manufacturing Properties.....	201
<b>Glossary of Wood and Woodworking.....</b>	<b>203</b>
<b>Index .....</b>	<b>219</b>

## Index of Illustrations

<b>Table</b>	<b>1</b>	Chronological table.....	5
<b>Map</b>	<b>1</b>	Prefectures and regions of Japan. (Created using Generic Mapping Tools software.).....	6
"	<b>2</b>	Japan in the Far East. (Based on Collcut <i>et al.</i> , 1989, p. 15. Modified using GMT software.).....	9
"	<b>3</b>	Vegetation zones and profiles of Japan. (Based on Horikawa, 1972.).....	11
<b>Table</b>	<b>2</b>	Location of trees in the botanical classification using the example of a coniferous tree, <i>Chamaecyparis obtusa</i> , and a broad-leaved tree, <i>Fraxinus mandshurica</i> var. <i>japonica</i> . ....	24
<b>Table</b>	<b>3</b>	Vernacular names by way of the scientific name.....	25
<b>Figure</b>	<b>1</b>	Umbrella pine ( <i>kôyamaki</i> ; <i>Sciyadopitys verticillata</i> ), Kôyasan (Wakayama Prefecture). ....	28
"	<b>2</b>	Umbrella pine ( <i>kôyamaki</i> ) beside Kôyasan's principal temple, Kongôbu-ji (Wakayama Prefecture). ....	28
"	<b>3</b>	Main parts of a tree and circulation of nutrients (after Desch, 1968, p. 15). ....	30
"	<b>4</b>	Macroscopic features of wood (modified from Schweingruber, 1990, p. 13). ....	31
<b>Table</b>	<b>4</b>	Function of the cells in softwoods and hardwoods (after Lohmann, 1991, p. 14). ....	32
<b>Figure</b>	<b>5</b>	Tangential sections ( <i>itame</i> ) of Japanese yew ( <i>ichii</i> ; <i>Taxus cuspidata</i> ) and Japanese chestnut ( <i>kuri</i> ; <i>Castanea crenata</i> ). ....	33
"	<b>6</b>	Regular and simple grain of the radial section ( <i>masame</i> ) of left Japanese yew ( <i>ichii</i> ; <i>Taxus cuspidata</i> ) and right Japanese chestnut ( <i>kuri</i> ; <i>Castanea crenata</i> ). ....	34
"	<b>7</b>	"Crepe" figuring ( <i>chijimi-moku</i> ) on a board of Japanese horse-chestnut ( <i>tochinoki</i> ; <i>Aesculus turbinata</i> ). ....	35
"	<b>8</b>	"Tiger fleck" ( <i>torafu</i> ) on deciduous oak ( <i>nara</i> ; <i>Quercus</i> sp.). ....	35
"	<b>9</b>	"Tiger fleck" appearing as ribbons (detail of figure 8). ....	35
<b>Table</b>	<b>5</b>	Natural colours of wood (after Kiuchi, Narita, 1996, p. 53). ....	37
<b>Map</b>	<b>4</b>	Traditional woodcraft centers of the Japanese archipelago, excluding Hokkaidô and Okinawa. (Based on Inumaru, Yoshida, 1992; made using GMT software). ....	44
<b>Table</b>	<b>6</b>	<i>Sashimono</i> craftsmen. ....	47
<b>Map</b>	<b>5</b>	Fields of fine cabinetmaking ( <i>sashimono</i> ) investigated in this study. ....	48
<b>Figure</b>	<b>10</b>	Ôsaka-style fine Chinawood cabinet made of rosewood ( <i>shitan</i> ; <i>Dalbergia</i> sp.). By Miyashita Kenjirô. (Photo by Miyashita Kenjirô). ....	50
"	<b>11</b>	<i>Kushi-gata</i> , or comb-shaped, window opening. ....	50
"	<b>12</b>	Joinery techniques for posts in Ôsaka-style fine Chinawood cabinetmaking. ....	50
"	<b>13</b>	Examples of joinery techniques. [Based on <i>Kyôto mokkôgei kyôdo kumiai</i> (ed.), undated, p. 13.] ....	50
"	<b>14</b>	Kyô-sashimono display cabinet intended for use in a Japanese-style room. By Iguchi Akio. ....	51
"	<b>15</b>	<i>Umekoboku-robuchi</i> , uncoated hearth frame made from the wood of an old apricot ( <i>ume</i> ) tree. By Inao Seichûsai. (© Nihon Tokushu Printing.) ....	51
"	<b>16–23</b>	Various steps of working process of Hakone-style wood mosaic. ....	51–52
<b>Table</b>	<b>7</b>	<i>Horimono/chôkoku</i> craftsmen. ....	53
<b>Map</b>	<b>6</b>	<i>Horimono/chôkoku</i> production centers investigated by the author. ....	54
<b>Figure</b>	<b>24</b>	Higashi Katsuhiro, single-chisel yew sculptor, drawing the outline of a crab on the surface of a piece of yew. ....	55
"	<b>25</b>	Carving of a Japanese bantam, rough stage ( <i>Japanese zelkova</i> ). ....	55
"	<b>26</b>	Intermediate sketching (detail of figure 25). ....	55
"	<b>27</b>	Hollowed-out parts of a Buddhist sculpture (Japanese nutmeg). By Eri Kôkei. ....	56
"	<b>28</b>	Roughly-carved and loosely-assembled sculpture set aside for seasoning. By Eri Kôkei. ....	56



"	29	Fudô Myô-ô, or Acala, "The Unshakable" (hinoki cypress). By Eri Kôkei. Cut gold-leaf <i>kirikane</i> decoration by Eri Sayoko. Ryûkôtoku-ji Temple, Saga Prefecture. (Photo by Kimura Naotatsu.) .....56
"	30	Higashi Naoko shown with single-chisel yew carving tools. ....57
<b>Table</b>	8	<i>Hikimono</i> craftsmen. ....58
<b>Map</b>	7	<i>Hikimono</i> centers investigated by the author. ....58
<b>Figure</b>	31	Ayabe Yuki fashioning a bowl on a <i>rokuro</i> . ....59
"	32	Japanese horse-chestnut ( <i>tochinoki</i> ; <i>Aesculus turbinata</i> ). ....59
"	33	Japanese zelkova ( <i>keyaki</i> ; <i>Zelkova serrata</i> ). ....59
"	34	White-leaf Japanese magnolia ( <i>hônoki</i> ; <i>Magnolia obovata</i> ). ....59
"	35	Peeling stem prior to conversion. Workshop of Ogura Chikashi. (Nagiso, Nagano Prefecture). ....60
"	36	Object-oriented cutting of turning blanks. ....60
"	37	Deciding the grain direction is part of the object-oriented cutting process. ....61
"	38	Hollowing-out of the "blank" ( <i>genzai</i> ) with an adze ( <i>chôna</i> ), (Nagiso, Nagano Prefecture). ....61
"	39	Fashioning the rough shape ( <i>aragata</i> ) of a bowl with an axe ( <i>ono</i> ), (Nagiso, Nagano Prefecture). ....61
"	40	Turning the inner surface of a bowl, (Nagiso, Nagano Prefecture). ....62
"	41	Turning the outer surface of a bowl, (Nagiso, Nagano Prefecture). ....62
"	42	Roughly-turned pieces being seasoned. ....62
"	43	Main turning chisels called <i>rokuroganna</i> . ....62
<b>Table</b>	9	<i>Magemono</i> craftsmen. ....64
<b>Map</b>	8	<i>Magemono</i> production centers investigated by the author. ....64
<b>Figure</b>	44	Kiso forest with hinoki cypress, ( <i>hinoki</i> ; <i>Chamaecyparis obtusa</i> ), southwestern part of Nagano Prefecture. ....65
"	45	Natural hiba-arborvitae forest ( <i>hinoki-asunaro</i> , <i>hiba</i> , <i>Aomori-hiba</i> ; <i>Thujopsis dolabrata</i> var. <i>hondai</i> ), Assabu forest, Oshima Peninsula, Hokkaidô. (Photo by Yumoto Takakazu). ....65
"	46	Natural grown forest of "Akita-cedar", ( <i>Akita-sugi</i> ; <i>Cryptomeria japonica</i> ), Akita Prefecture. ....65
"	47	Converting logs into <i>ôwari</i> , or quarters (Narita, 1996c, p. 20). ....66
"	48	Conversion by splitting or sawing logs into <i>kowari</i> , or thin slices (Narita, 1996c, p. 20). ....66
"	49	From left to right: Using a riving knife, or <i>heginata</i> , to split slices successively into thicknesses of two <i>sun</i> , one <i>sun</i> , and five <i>bu</i> (Narita, 1996c, p. 22). ....66
"	50	Kijima Toshio, of Nagano Prefecture's Nagiso, splitting a hinoki cypress board. ....66
"	51	Kojima Toshio smoothing the surface of a slice with a drawknife. ....67
"	52	A <i>hirasen</i> , or drawknife. (Based on Narita, 1996c, p. 52.) ....67
"	53	Slice-ends tapered for joining, a technique called <i>hagite-kezuri</i> . (Based on Narita, 1996c, p. 54.) ....67
"	54	Kojima Toshio soaking slices in hot water. ....67
"	55	Using a bending roller to bend a slice into a round shape. ....67
"	56	Clamping the bent slice in preparation for drying. ....68
"	57	Elements of a <i>ki-basami</i> , or wooden clamp. (Based on Narita, 1996c, p. 55.) ....68
"	58	Shirai Masaharu preparing cherry-bark for cutting. ....68
"	59	Sewing the wooden ring's ends with cherry-bark strips. ....68
"	60	Three types of bottoms: simple, elevated, and rabbeted. (Based on Narita, 1996c, p. 59.) ....69
"	61	Inserting a sieve's screen and tightening it with the help of an inner wooden ring. ....69
"	62	Bentwork with cherry-bark strips woven into the overlapping ends of a slice. By Shibata Yoshinobu. ....69
<b>Table</b>	10	<i>Daiku</i> and <i>daiku</i> -related individuals. ....70
<b>Map</b>	9	<i>Daiku</i> centers. ....71
<b>Figure</b>	63	A log imported from Taiwan for use in the reconstruction of the Yakushi-ji Lecture Hall. ....71
"	64	Roof construction, Lecture Hall of Yakushi-ji. (Photo taken May, 1999.) ....72
"	65	Planing with a spear-headed plane, or <i>yariganna</i> . ....72
"	66	<i>Chashitsu</i> , a teahouse with a <i>kayabuki</i> thatched roof, near Hanase, Kyôto City. ....72
"	67	View of the rafters, the roof, and the unfinished wall. ....72
"	68	Inner construction of wall. Carpenter: Hirose Takayuki. ....73

<b>Map</b>	<b>10</b>	Natural distribution of Japanese cedar ( <i>sugi</i> ; <i>Cryptomeria japonica</i> ) and its timber varieties. (Modified from Hayashi, 1960, map no. 60.) .....76
<b>Figure</b>	<b>69</b>	<i>Akita-sugi</i> (Akita Prefecture) ceiling panel (Izugen Meiboku Co.). .....78
"	<b>70</b>	<i>Yoshino-sugi</i> (Yoshino, Nara Prefecture) ceiling panel (Izugen Meiboku Co.). .....78
"	<b>71</b>	<i>Yaku-sugi</i> (Yakushima Island, Kagoshima Prefecture) ceiling panel (Izugen Meiboku Co.). .....78
"	<b>72</b>	<i>Tosa-sugi</i> (also called <i>Yanase-sugi</i> ) (Kôchi and Tokushima Prefectures) ceiling panel (Izugen Meiboku Co.). .....79
"	<b>73</b>	<i>Kirishima-sugi</i> (southern Kyûshû, especially Miyazaki Prefecture) ceiling panel (Izugen Meiboku Co.). .....79
"	<b>74</b>	<i>Kasuga-sugi</i> (Mie Prefecture and vicinity of Nara Prefecture's Kasuga Shrine) ceiling panel (Izugen Meiboku Co.). .....79
"	<b>75</b>	<i>Kôgô</i> , or incense container, made of <i>koëmatsu</i> , "fatty pine". By Ayabe Yuki. ....80
<b>Table</b>	<b>11</b>	Tree groups mentioned by Japanese woodworkers. ....84
<b>Table</b>	<b>12</b>	Timber classifications used by Japanese woodworkers. ....85
<b>Table</b>	<b>13</b>	A craftman's classification of wood. ....90
<b>Table</b>	<b>14</b>	An artisan's classification of Japanese cedar ( <i>sugi</i> ; <i>Cryptomeria japonica</i> ). ....91
<b>Map</b>	<b>11</b>	Distribution of the northern variety of hiba arborvitae ( <i>hinoki-asunaro</i> ; <i>Thujopsis dolabrata</i> var. <i>hondai</i> ) (based on Hayashi, 1960, map no. 67). ....98
<b>Map</b>	<b>12</b>	Distribution of hinoki cypress ( <i>hinoki</i> ; <i>Chamaecyparis obtusa</i> ) (based on Hayashi, 1960, map no. 62). ....99
<b>Figure</b>	<b>76</b>	Small Hakone-style wood mosaic chest. By Tsuyuki Hiro'o. ....103
"	<b>77</b>	The various components which will be joined together to form the mosaic patterns used in the making of Hakone-style wood mosaic chests. ....103
"	<b>78</b>	<i>Tama-moku</i> , or "pearl" figuring. Japanese zelkova ( <i>keyaki</i> ; <i>Zelkova serrata</i> ). ....104
"	<b>79</b>	Regular flat-sawn grain. Japanese zelkova ( <i>keyaki</i> ; <i>Zelkova serrata</i> ). ....104
"	<b>80</b>	Shakes, or checks, seen on an end-grain surface. [Based on Greenhalgh (ed.), 1929, vol. 3, p. 6.] .....105
"	<b>81</b>	Various grains, obtained by different cutting directions. ....109
"	<b>82</b>	Jewel case ( <i>hôseki-bako</i> ) cover with "fatty" pine ( <i>koëmatsu</i> ) figuring, framed in ironwood ( <i>tagayasan</i> ; <i>Cassia siamea</i> ). By Wani Akio. ....110
"	<b>83</b>	Bottom of jewel case, made of wenge veneer ( <i>wenji</i> ; <i>Millettia laurentii</i> ) framed by solid ironwood ( <i>tagayasan</i> ; <i>Cassia siamea</i> ). ....110
"	<b>84</b>	Horse carved of one piece of buried zelkova ( <i>jindai-keyaki</i> ). ....111
"	<b>85</b>	Stages in the carving of a <i>Nô</i> mask. ....111
"	<b>86</b>	Ayabe Yuki drawing the outlines of an object to be turned on a plank. An example of object-oriented cutting ( <i>kidori</i> ). ....112
"	<b>87</b>	The priest Enkû (1632–1695) carving the face of a colossal guardian deity into a living tree. From <i>Kinsei-kijinden</i> [Legends relating to extraordinary persons of recent centuries] by Ban Kôkei (1733–1806). (Courtesy of the International Research Center for Japanese Studies, Kyôto.) .....123
"	<b>88</b>	The hermit Hôdô, founder of the Ichijô Temple (Yamanashi Prefecture). Made by Eri Kôkei. ....124
"	<b>89</b>	Vacant plot in the precincts of Ise Shrine. ....126
"	<b>90</b>	Illustration from a carpentry manual showing a ridge-raising ceremony's <i>sanpei-gi</i> ritual, performed to ward off misfortune during construction. Rice cakes and snacks are thrown to the crowd ( <i>Shôka hitsuyôki</i> , 1756). (Courtesy of the Architectural Institute of Japan, Library Digital Archives.) .....127
"	<b>91</b>	Ridge-raising ceremony of Hakusasonsô, atelier of Kyôto painter Hashimoto Kansetsu (1883–1945). October, 1916. (Photo courtesy of Hashimoto Kansetsu Foundation.) .....128
"	<b>92</b>	Foliate sandalwood offering box, or <i>sasagemono</i> . (Photo courtesy of Imperial Household Agency, Shôsô-in Office.) .....130
"	<b>93</b>	Japanese zelkova box modeled after the foliate box in the Shôsô-in. By Iguchi Akio. (Kyôto University, Xylarium.) .....130
"	<b>94</b>	Main <i>shoin</i> -style buildings of the Katsura Imperial Villa (Katsura rikyû). (Photo courtesy of Imperial Household Agency, Kyôto Office.) .....131
"	<b>95</b>	Interior view of the Shin-goten showing, at rear right, the <i>kushigata no mado</i> (Dentô bunka hozon kyôkai, 2001). (Courtesy of Imperial Household Agency, Kyôto Office.) .....131



"	96	<i>Akita-sugi</i> ceiling panel with “Genpei” figuring (Izugen Meiboku Co.).	132
"	97	Principal structural planes in a stem.	136
"	98	Stems ready for auction at a Gifu Prefecture superior-quality wood market.	137
"	99	End grain of a black persimmon ( <i>kurogaki</i> ; <i>Diospyros kaki</i> ) stem. Auction market, Gifu Prefecture.	137
"	100	Nandina wood ( <i>nanten</i> ; <i>Nandina domestica</i> ) incense container coated with Japanese lacquer.	138
"	101	Japanese camellia ( <i>tsubaki</i> ; <i>Camellia japonica</i> ) incense container.	138
"	102	Different ways of cutting the wood for a <i>Go</i> board.	139
"	103	Japanese nutmeg <i>Go</i> board showing the inside surface of the flat-sawn grain ( <i>itame ki-ura ban</i> ). (© Kiseido Publishing Company.)	139
"	104	Japanese nutmeg <i>Go</i> board with a “heaven and earth” straight grain ( <i>tenchi-masa ban</i> ).	139
"	105	Japanese nutmeg <i>Go</i> board with a “heaven” straight grain ( <i>ten-masa ban</i> ). (© Kiseido Publishing Company.)	139
"	106	Mulberry wood pentagonal tray with a straight-grain rim and a flat-sawn grain bottom board. (© Nihon Tokushu Printing.)	140
"	107	Straight grain on the cover of an <i>Akita-sugi</i> cooked-rice container made by Shibata Yoshinobu. (Photo by Cyril Ruoso.)	141
"	108	Different shrinkage effects of boards depending on their original location in the stem. (Redrawn from Corkhill, 1979, p. 509.)	141
"	109	Flat-sawn grain on the camphor wood ( <i>kusunoki</i> ; <i>Cinnamomum camphora</i> ) core of a <i>Nô</i> mask made by Sueno Shinya.	142
"	110	Figure of <i>Jizo bosatsu</i> (bodhisattva Ksitigarbha) made of straight-grained hinoki cypress. By Eri Kôkei.	143
"	111	Seated figure of the priest Muso made of flat-sawn grained camphor wood. By Eri Kôkei.	143
"	112	Tray made of black persimmon wood with “peacock” figuring. (Photo by Cyril Ruoso.)	144
"	113	Macroscopic view of the reddish-brown heartwood and the light coloured sapwood of jujube ( <i>natsume</i> ; <i>Zizyphus jujuba</i> ).	145
"	114	Frog on a wisteria seedpod. Carved by Higashi Katsuhiro from a single piece of jujube ( <i>natsume</i> ; <i>Zizyphus jujuba</i> ) wood. (Takayama, Gifu Prefecture.)	145
"	115	Left: a piece of <i>hinoki</i> . Right: a piece of <i>sugi</i> .	145
"	116	Differently colored persimmon wood. Left to right: <i>kakinoki</i> , persimmon; <i>shima-gaki</i> , “striped” persimmon; <i>kurogaki</i> , “black” persimmon.	146
"	117	“Wild geese and moon” incense container with white inlay. By Iguchi Akio.	146
"	118	Small Hakone-style wood mosaic box showing a variety of patterns, each composed of different indigenous wood species.	147
"	119	Kiso hinoki cypress image of Daiichi-nyorai (Buddha Mahāvairocana).	150
"	120	Detail showing the traces left by the final <i>ko-zukuri</i> carving. By Eri Kôkei.	150
"	121	Rough finishing with an old tool: a <i>hinoki</i> board from the Nara Period after having been finished in the ancient fashion with a curved-handled adze ( <i>chôna</i> ).	151
"	122	Chestnut-wood beam at Hokusansô, villa of painter Hashimoto Kansetsu (1883-1845). The beam was finished in the decorative <i>naguri-shiage</i> style.	151
"	123	The rice harvest deity Inari, sculpted by Enkû (1632-1695). Nishikiyama-jinja, Takayama, Gifu Prefecture. (Alphen, 1999, p. 174, photo by Mark de Fraeye.)	152
"	124	Removing springwood from a flat-sawn grain board to duplicate the split surface of a straight-grain board. (Weinmayr, 1996, p. 35.)	153
"	125	Traditional lamp made by Wada Ukichi.	154
"	126	Detail showing the frame being finished with an <i>uzukuri</i> brush.	154
"	127	Urushi-coated, and uncoated incense containers made of <i>nanten</i> (heavenly bamboo). (Taisandô Gallery, Kyôto City.)	156
"	128	Tea scoops made of different wood species. By Ayabe Yuki.	161

**In order to create a fine work,  
begin by knowing your wood.  
Then, because the wood is alive,  
it will align itself with your intentions.<sup>1</sup>**

---

<sup>1</sup> Woodworker and Intangible Cultural Property Takeuchi Hekigai (1896–1986) quoting one of his masters.  
See Moroyama, 1998, p. 4.



## Acknowledgements

The first step leading to the creation of this work was taken in Germany in 1983, when, intending to become an interior designer, I began a three-month cabinetmaking internship. Later, when my master, Joachim Lubasch, proposed doing a full apprenticeship, I enthusiastically accepted and started down the traditional three-year path.

Under the wise guidance of my master, I learned the tricks of the trade and how to distinguish the different wood species, not only by sight, but also by smell – when the scent of freshly cut timber filled the workshop – and by touch – when sawing, planing, and polishing the wood. Nowadays, machines have replaced many steps in the cabinetmaking process, but an apprentice in Germany still has to master the traditional tools and techniques. This I did, and my apprenticeship ended with an examination given under the supervision of the Federal State of Rhineland-Palatinate's Chamber of Handicrafts.

After a year engaged in antique furniture restoration, I decided to pursue an academic career and began to study Japanese and East Asian art history in the University of Heidelberg's newly established Department of Japanese Studies. Two years later, I continued my East Asian art history study at the University of Sorbonne (Paris IV), where I received a master's degree after having proposed a new method of dating Japanese Buddhist images.<sup>2</sup>

At that time, I came across an outstanding course on wood anatomy offered by the Faculty of Paleobotany-Paleoecology at the University Pierre and Marie Curie (Paris VII). There I learned the basics of microscopic wood identification and the scientific Latin names of trees.

The more I became involved in wood studies, however, the more I realized that within the community of archaeologists and art historians there appeared to be profound lack of information and expertise concerning Japanese wood. I therefore decided to try to fill that gap by writing – admittedly as an historian of East Asian art – a doctoral thesis in the field of ethnobotany under the direction of Professor George Métaillé, research director of France's Centre National de la Recherche Scientifique (CNRS) and member of the Centre Alexandre Koyré at the National Museum of Natural History.

A great number of artisans in Japan still preserve customs and traditions that have been passed down from generation to generation. I was keen to base my research on the knowledge and experience of those woodworkers who continue to transmit this ancient wisdom. I aimed to interview them, hoping to elicit their views, not only on the technical, but also the aesthetic and cultural, aspects of their craft. Because of my woodworking background, I felt I would make a credible conversational partner. Professor Itoh Takao, a wood scientist well known for his skill at identifying the wood species of Buddhist images and excavated wooden remains, agreed to help me conduct the interviews and undertake the necessary research at Kyôto University's Wood Research Institute (now named the Research Institute for Sustainable Humanosphere.) I worked at his institute as an invited researcher from May, 1999, to July, 2001.

So many people have contributed to the present book that it would not be possible to name them all. By naming just a few, however, I do not wish to appear less indebted to the many others whose

---

<sup>2</sup> Mertz, 1995.

このプレビューでは表示されないページがあります。

## Notes on typography

The present book observes the conventional Japanese proper name order, with family name appearing first. Special terms are italicized only when first introduced. Japanese terms and Japanese tree and timber names are italicized throughout the work. All translations from the Japanese are my own unless otherwise acknowledged.

Appendix 1 lists the Japanese vernacular names of all trees, wood, and plants mentioned in the present book; the Japanese characters for those names and their scientific names; their English, French, and German vernacular names; and the heights and the distributions of the trees.

Also appended is a glossary of technical terms related to wood and woodworking which shows the Japanese characters for those terms, as well as their English, French, and German equivalents.

Romanization of Japanese words employs the modified Hepburn system, although a few exceptions have been made in the case of Japanese proper names. In some instances, Japanese terms have been hyphenated to clarify pronunciation. The symbol ^ above a letter indicates an elongated vowel. The suffixes *-ji* or *-dera* indicate a temple, *-jinja* and *-jingû* a shrine, *-ken* a prefecture, *-gun* a district, *-shima* or *-tô* an island, and *-san* a mountain. The suffix *-kuni* denotes a province<sup>3</sup>, and *-han* a feudal clan or province. The traditional measurement *shaku* is the Japanese equivalent for “foot” and is divided into ten *sun*. One *shaku* is equivalent to 30.3 cm, one *sun* to 3.03 cm, and one *bu* to 0.3 cm.<sup>4</sup>

---

3 Japan was divided into seventy-three provinces until 1890. Now it consists of forty-seven territorial jurisdictions: the capital (*to*) Tōkyō, an island prefecture (*dô*), two urban prefectures (*fu*), and forty-three other prefectures (*ken*).

4 “In 1885 a decision was made to align the Japanese standards with the predominantly European-based standard, much to the chagrin of the British and the Americans. It was decided that one meter should comprise 3 *shaku*, 3 *sun*. One *shaku* thus became 30.3 centimeters [...]. These standards were formally adopted in 1885 and promulgated by imperial decree in 1886” (Coaldrake, 1990, p. 156.)



このプレビューでは表示されないページがあります。

## INTRODUCTION

Because the main theme of this book concerns Japanese traditional woodcraft, it is necessary to understand the local environment and the influence it has on the rich variety of wood available in Japan. In order to do so, this introduction will deal with these topics, as well as Japan's *ki no bunka*, or “culture of wood”.

### The natural environment

The Japanese archipelago consists of a range of mountainous islands stretching southwest to northeast along the eastern edge of the Eurasian continent. To the west lies the Sea of Japan and to the east the Pacific Ocean. It has a south-north extension of approximately 2,400 km from about 24° to 46° north latitude. Hence, it extends from the subtropical to the subarctic zone. It consists of four main islands—Hokkaidō, Honshū, Shikoku, and Kyūshū—which occupy about 97% of the total land area. Apart from these there is a scattering of several thousand small islands. The total land surface covers 372,300 km<sup>2</sup>. “The Japanese lands are connected intermittently with the Asiatic continent by four land chains, namely, by the Kurile Islands and Kamchatka, by Sakhalin, by the Tsushima Islands and the Korean Peninsula and by the Ryūkyū Islands and Taiwan. These land chains are important in tracing the origin of the Japanese flora in connection with the continental flora”.<sup>6</sup>

Covered by abundant verdure, the Japanese islands are blessed with an extraordinary variety of wood species.

Asa Gray<sup>7</sup> was one of the first botanists to attempt to statistically compare the great number of arborescent species in Japan with those of northeastern North America. He “drew some comparison between the forests of eastern North America and those of the Japanese-Manchurian<sup>8</sup> region of Asia. Here is shown that, rich as eastern America is in tree species, Japan, and the regions to the north of it, in spite of their comparatively small area, are still richer. Professor Gray's Asiatic region included the four Japanese islands, eastern Manchuria, and the adjacent borders of China, while the contrasted American region embraced the territory east of the Mississippi River, but excluded the extreme southern part of Florida [...]. In the Japan-Manchurian region he found 168 trees divided among 66 genera, and in eastern America 155 trees in 66 genera, the enumeration in both cases being confirmed to ‘timber-trees, or such as attain in the most favourable localities to a size which gives them a clear title to the arborous rank.’”<sup>9</sup> Other botanists continued such analogical procedures with the entire flora. Maekawa Fumio, for example, compares Japanese flora<sup>10</sup> with that of the

6 Horikawa, 1972, p. 8.

7 Asa Gray (1810–1888), botanist at Harvard University from 1842–1887. In his phytogeographic research, Gray explained that many of the plant taxa which appeared in both eastern Asia and eastern North America, are not separate creations, but rather descendants from a Tertiary circum-boreal flora that was pushed southward by the Pleistocene glaciation. (Leppig, 1996.)

8 The Japan-Manchurian region comprises here eastern Manchuria, the Kurile Islands, Sakhalin, and the four main Japanese islands, the Ryūkyū Islands not included.

9 Sargent, 1894, pp. 1–2.

10 Ohwi, 1965 (with the exclusion of the Ryūkyū and Bonin Islands).

このプレビューでは表示されないページがあります。



# 1. WOOD BASICS

A complex material, wood comes from a large number of different species, each possessing specific features and properties. Any discussion of wood in an international setting, however, requires a thorough comprehension of trees and timber names, and, for this reason, this book begins with an introduction to wood nomenclature.

It is also important to equip the reader with some understanding of the basics of wood (e.g., its structure and properties) so that wood as a material may be better defined. This knowledge will prove useful in understanding the following chapters.

## 1.1. Nomenclature of Trees and Timbers

When Japanese woodworkers and wood scientists talk about wood, they do not use the same terminology. Woodworkers use *betsumei* – non-standard, or vernacular names. However, scientists, especially botanists, use *gakumei* – botanical, scientific, Latin (or Latinized) names. For example, a Japanese woodworker, referring to a paulownia, would use the term *kiri*, but a wood scientist would use *Paulownia tomentosa*. Thus, when studying wooden artefacts in the context of such Western social sciences as East Asian art history, archaeology, and ethnology, the researcher faces a problem of terminology.

Does the term in question refer to the living tree, or to the wood material? Should one use the scientific name, the Japanese vernacular name, or the vernacular name of one's own language, if indeed such a name exists? And when several names exist, which one should be used? Which names will be understood in an international context? Wood or tree names are surprisingly complex for the non-botanist, causing confusion and misunderstanding. This is especially true when a non-Japanese vernacular name is used. Take, for example, the case of paulownia, which in addition to several other English names (*royal paulownia*, *princess tree*, *foxtglove-tree*, *empress tree*, *imperial tree*), also has French (*paulownia imperial*, *arbre d'Anna Paulowna*, *paulownia tomenteux*), and German (*Paulownie*, *Blauglockenbaum*, *chinesischer Blauglockenbaum*, *filzige Paulownie*, *Kiribaum*, *kaiserliche Paulownie*) ones.<sup>69</sup>

In the Japanese language the character 木 stands for both “tree” and “wood”. Both the native Japanese transcriptions *ki* and *ko* as well as the Sino-Japanese readings *moku* and *boku* refer to the standing tree and the wood. *Ko*, *moku*, and *boku* are only found in multi-character compound words. The Japanese vernacular names of the living tree and the wood material are one and the same; often the context reveals which is meant. Botanical names are only used in highly specialised botanical or horticultural discourse and are difficult for those who are not trained in their use. In many other fields, such as woodworking and carpentry, but also more scholarly fields, such as Japanese literature and poetry, trees and wood are referred to by a variety of other names, which vary depending on the linguistic context and the region. An explanation of the terminology of Japanese wood and tree names should be based on a clear differentiation and understanding of the concepts of botanical and

<sup>69</sup> In Appendix 1, the names are given in the three languages mentioned here.

このプレビューでは表示されないページがあります。



**Figure 1** Umbrella pine (*kôyamaki*; *Sciadopitys verticillata*), Kôyasan (Wakayama Prefecture).



**Figure 2** Umbrella pine (*kôyamaki*) beside Kôyasan's principal temple, Kongôbu-ji (Wakayama Prefecture).

market this inner bark can be easily seen if the outer bark (*gai-jushi*) has been ripped off by rough handling. The tree is, in fact, the Korean pine (*Pinus koraiensis*), its standard vernacular Japanese name *Chôsen-goyô* (literally, “Korean five-leaves”) referring to the needles clustered in groups of five. The term *benimatsu* is the Japanese reading of its Chinese name, *hong song*.

It is quite common for more than one species to be included under a single timber name, either because the wood species are functionally equivalent and can be used interchangeably, or, because once they are cut, they are very difficult or impossible to distinguish.

Conversely, the wood of a single species may be divided into more than one commercial category, resulting in more than one trade name. This is the case with persimmon (*kakinoki*; *Diospyros kaki*), which can be called “black persimmon” (*kurogaki*), or, when the timber is irregularly blackened, “striped persimmon” (*shimagaki*).

As Japan generally does not export its wood,<sup>102</sup> there are hardly any special trade names for Japanese timbers in Western languages. One of the rare exceptions is the Japanese ash, also known as *tamo* (*Fraxinus mandshurica*), which has been exported by Japan since the end of the nineteenth century for precious veneers.<sup>103</sup>

A great number of trade names exist for foreign timbers imported into Japan. The Japanese usually adopt the international timber market name, as in the case of teak (*chiku*; *Tectona grandis*) or lauan (*rawan*; *Shorea* spp.). Other examples are discussed in Chapter 3, but an extensive study of the nomenclature of imported timber goes beyond the scope of this book. For now, I refer readers to

102 Ishii, 1994, p. 1037.

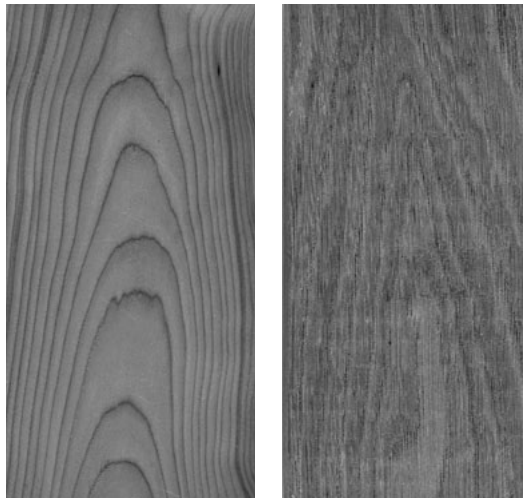
103 George: [http://www.george-veneers.com/recup\\_donnees\\_bois.php](http://www.george-veneers.com/recup_donnees_bois.php), see “tamo”.



このプレビューでは表示されないページがあります。

### 1.3.2. Tangential section

The tangential section is the surface of the wood that is cut tangentially to the annual rings. The wood shows a *flat grain* and is thus called *flat-sawn grain*, or, in Japanese, *itame*. Typically, the growth rings appear cone-shaped and lined up one above the other. It is helpful to imagine the stem itself being cone-shaped. The larger diameter is situated at the bottom and the stem gradually becomes narrower towards the crown. As a result, the tree-ring layers are not at exact right angles to the ground; as their diameter gradually diminishes towards the top of the tree, their alignment is inclined towards the pith. When the timber is cut tangentially into boards, the saw cuts into the tree rings and makes several layers visible. The layers are alternately light and dark in softwoods, whereas in hardwoods the cutting into the vessels has an effect on the texture, especially in wood with larger pores. Both show a design of small parabolas or cones (figure 5).



**Figure 5** Superposed parabolas or cones, a typical feature of a tangential section (*itame*) of, left, Japanese yew (*ichii*; *Taxus cuspidata*), and, right, Japanese chestnut (*kuri*; *Castanea crenata*).

In Japanese the expression *takenoko-moku*, or “bamboo shoots” figuring (figure 5, left), compares the beautiful design created by such cones in the centre of a board to the shapes of bamboo shoots. This figuring is generally related to softwoods, which show a relatively distinct early and latewood. It appears, for example, often in Japanese cedar (*sugi*; *Cryptomeria japonica*).

### 1.3.3. Radial section

The radial section is the surface of a wood cut along a plane containing the axis or the pith. The wood grain is called *quarter-sawn grain* or *straight grain* (figure 6). The Japanese name is *masame*. Distinctive growth rings appear as lines in the radial section. This gives a regular, almost monotonous grain, very much appreciated in *Akita-sugi*, Japanese cedar from Akita Prefecture in northern Japan. The wood shrinks and warps (*hizumu*) less than when flat-sawn. In certain wood species, especially oak, rays strikingly appear as large shiny bands. This beautiful figuring is called *silver grain*,<sup>109</sup> or *torafu* (literally, “tiger fleck”) in Japanese (figures 8 and 9).

<sup>109</sup> In France, particularly in Normandy, this silver grain was very much appreciated for use in chests made of “chêne merrain” (‘wainscot oak’). Imported from the Baltic via the harbour of Riga, silver-grained wood was used for principal surfaces such as doors and panels. “Les bâtis et les moulures en chêne dit “de Prusse” encadrent des panneaux de merrain moirés de larges mailles. Le bois de chêne, dénommé “merrain”, connu et employé depuis longtemps, doit être fendu et non scié, et débité en rayons médullaires afin d’obtenir les belles mailles mouvementées des panneaux ; les montants et les traverses, appelés à recevoir des moulures

このプレビューでは表示されないページがあります。

## 2. TRADITIONAL WOODWORKING IN JAPAN

This book's objective is to provide a picture of the variety of Japanese wood species and their uses in traditional Japanese crafts. As the best means of accomplishing this, it was decided to interview contemporary craftsmen still active in the field of traditional Japanese woodworking.

The focus of these interviews was placed mainly on traditional crafts because their history dates back prior to the opening of Japan to the West in 1854.<sup>126</sup> As a result, the traditional crafts that survive today are largely free from foreign influences and new technologies.

Even today a great number of traditional crafts are practiced throughout Japan. They survive in spite of a century of rapid economic growth that propelled Japan from a feudal state into one of the most industrialized countries in the world. In such a Westernized and market-oriented society, however, these traditional crafts are threatened with the risk that they will slowly disappear. Concerned by this possibility, the Japanese government decided to pass legislation to protect and promote traditional craft industries, a decision that arose out of a growing awareness that these age-old traditional Japanese crafts represent an inestimable treasure which merits protecting.

As early as 1950, a law was passed protecting National Cultural Properties. On May 25, 1974, the Law for the Promotion of Traditional Craft Industries was enacted, its chief aims being "to ensure an understanding [and] appreciation of the crafts, their reliable and efficient marketing, and also their continued healthy existence in the future."<sup>127</sup> It is up to the Ministry of Economy, Trade and Industry (METI)<sup>128</sup> to decide which craft items can be labelled "traditional handicrafts". The law stipulates that certain criteria must be fulfilled in order for an item to be considered a work of traditional craftsmanship. The law describes these criteria as follows:<sup>129</sup>

a. Objects used in everyday life.

Craft items are officially defined as objects used in everyday life. In a larger sense this also includes objects used during such special ceremonial occasions as annual festivals. Even if they are used only a few times a year, or not at all, they are considered to be part of the Japanese way of life. Objects used for entertainment or in leisure activities are

126 In 1854, under the pressure of the American government and the threat of an attack by a fleet under the command of Commodore M. C. Perry (1794–1858), the Tokugawa government was forced, after more than 200 years of relative isolation, to open the country for trade with the West. With the opening of the country, Japan was exposed to many aspects of Western culture. The *bunmei kaika*, or "civilisation and illumination" which followed, was a period of rapid Westernization. During this process of modernization, many aspects of the traditional Japanese way of life were replaced by Western ones, and this had a great impact on traditional handicrafts and everyday objects. A great number of crafts went into decline or disappeared altogether.

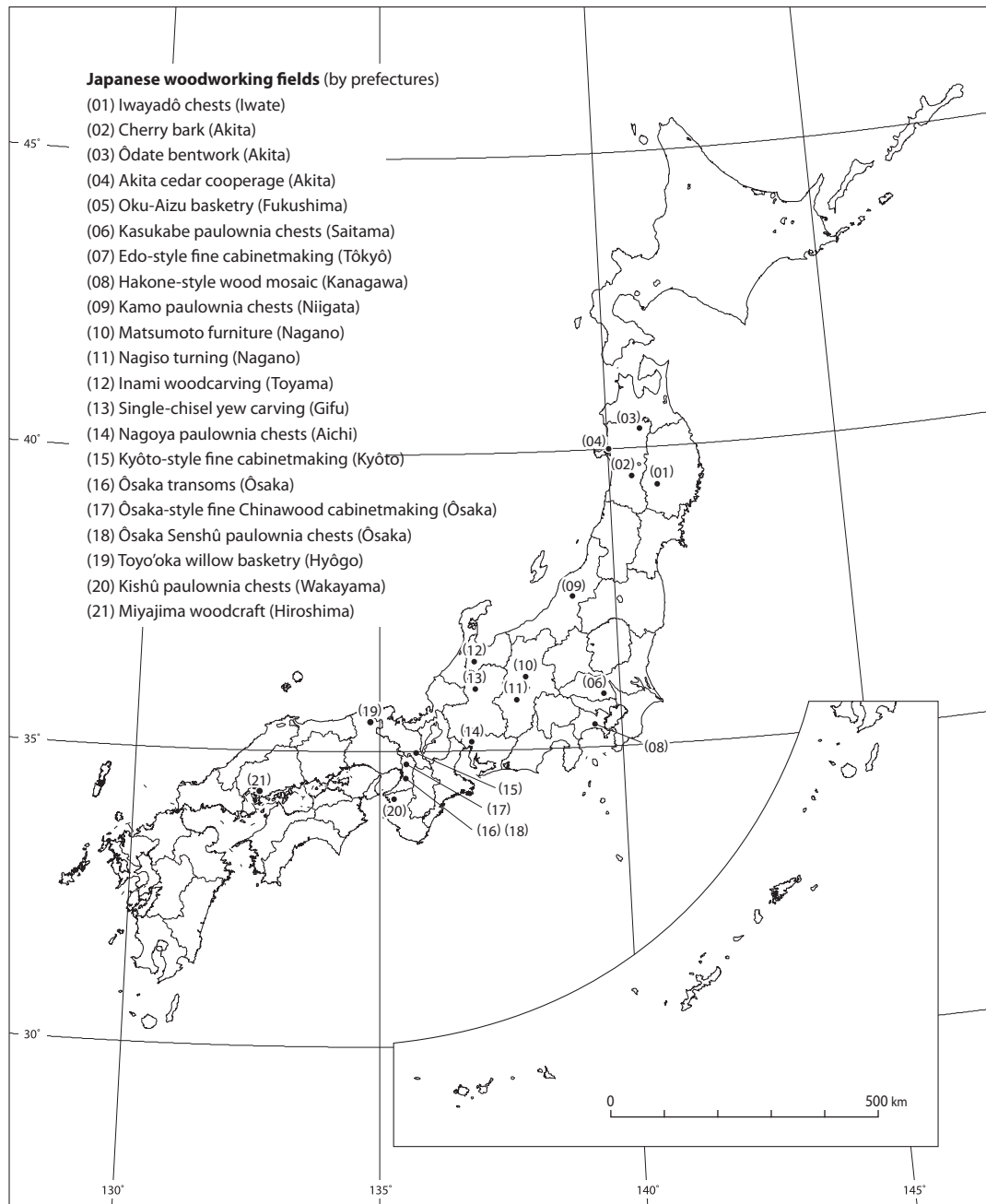
127 Japan Traditional Craft Center (ed.), no date, p. 5.

128 Reorganised in 2001, it was formerly called the Ministry of International Trade and Industry (MITI).

129 See Dentôteki kôgeihin sangyô shinkô kyôkai [Society for the Promotion of Traditional Craftwork Industries]/Japanese Traditional Craft Center (ed.), 2000, pp. 6–7.



このプレビューでは表示されないページがあります。



**Map 4** Traditional woodcraft centers of the Japanese archipelago, excluding Hokkaidô and Okinawa. (Based on Inumaru, Yoshida, 1992; made using GMT software.)

このプレビューでは表示されないページがあります。

**5** *kidori* (object-oriented cutting)



In object-oriented cutting the woodworker prepares the wood for carving. He decides how to position the desired object in the woodblock (*i.e.*, he decides which surface will be the main one), then draws a sketch of the object on the raw wood block.



**Figure 24** Higashi Katsuhiro, single-chisel yew sculptor, drawing the outline of a crab on the surface of a piece of yew.



**Figure 25** Carving of a Japanese bantam, rough stage (*Japanese zokkova*).



**Figure 26** Intermediate sketching (detail of figure 25).

**6** *arabori* (rough carving)



**7** *uchiguri* (hollowing out)



**8** *kansô* (seasoning)



Large objects have to be hollowed out in order to prevent cracking and splitting. After having been hollowed out, the sculpture's walls are then thin enough to be seasoned. In this state the sculpture is set aside to dry for at least one year.



このプレビューでは表示されないページがあります。

the rough turning, or *aradori*.<sup>145</sup> The *uma* enables the tool to be operated like a lever, and this makes the work easier. The chisel is held at a certain angle against the turning piece, which rotates counterclockwise. Movement, angle, and tool pressure are controlled not only by the hands, but by the whole upper body. For rough carving, the tool is directed with great pressure, and the piece soon acquires the rough shape of a round bowl. The turner places himself in front of the object to turn the inside of the piece (figure 40). To fashion the outside, the craftsman changes his position to the side (figure 41).



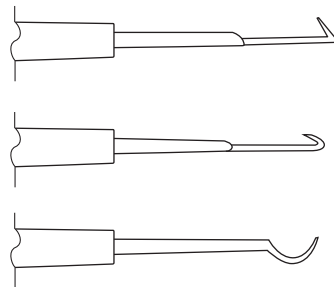
**Figure 40** Turning the inner surface of a bowl, (Nagiso, Nagano Prefecture).



**Figure 41** Turning the outer surface of a bowl, (Nagiso, Nagano Prefecture).



**Figure 42** Roughly-turned pieces being seasoned.



**Figure 43** Main turning chisels called *rokuroganna*.

From top to bottom:

*aradori*: gouge for rough turning

*koganna*: gouge for intermediate turning

*shaka*: gouge for finishing turning

(Modified from Narita, 1996b, p. 124.)

<sup>145</sup> Although both planes and turning chisels are called *kanna* in Japanese, the names of planes are always written in *kanji* (Chinese characters), while turning chisel names are written in *katakana*.

このプレビューでは表示されないページがあります。

### 3. WOODWORKERS AND WOOD NOMENCLATURE

This chapter examines the timber nomenclature employed by Japanese woodworkers and attempts to establish a classification of timber names based on their usage of them. Vernacular timber names take into account an artisan's use of the wood. The names may reflect the technical and aesthetical exigencies of the artisan's working field, the geographic origin (local or foreign) of the timber, or some symbolic quality of the wood species.

In order to classify Japanese timber names, it is necessary to introduce both the timber names encountered in the interviews and the collective terms used to designate groups of wood. The chapter is divided into the following sections:

- Japanese Timber Names
- Tree and Timber Group Names
- Timber Classifications Used by Craftsmen

#### 3.1. Japanese Timber Names

As was mentioned in Chapter 1.1.3., many Japanese timber names are synonymous with tree names: *hinoki*, for example, may be used to indicate the tree as well as the wood. This is comparable to Western languages, whereby “oak”, “chêne” and “Eiche” may refer to both the tree and the wood, depending on the context. In the present study, however, one must keep in mind that traditional Japanese woodworkers, when using a timber name, refer to the material, not to the tree.

Besides the standard vernacular timber names, names can also reflect particular qualities of wood, ones that a craftsman is looking for. These qualities might be related to region, age, unusual growth, specific elements requiring a special way of cutting and treatment, or to a combination of these. In general, the name of such a particular wood is a combination of the standard vernacular name and a word that refers to that wood's particular property or feature. Such varieties of timber names also exist in Europe. The “European oak” (*Quercus petraea*), for example, is a hard, heavy wood, creamy-white to dark brown in colour. When it is riven or quarter-sawn, its surface shows a beautiful figuring, of conspicuous rays called “silver-grain”. “Wainscot oak” is the name given to this distinctive feature. In French this wood is known as “chêne merrain”. The so-called “brown oak” owes its name to a colour change caused by a parasitic mushroom, *Fistulina hepatica*, rendering the heartwood a darker shade, often a deep reddish-brown. This wood is highly appreciated by cabinetmakers. This was particularly the case in the nineteenth century.<sup>153</sup> Oak timber that has been preserved in a peat bog is called “bog oak”. The very dark colour, caused by iron impregnation, meant that this timber was ideal for inlay and applied decoration.<sup>154</sup> The specific Japanese timber names mentioned by the craftsmen interviewed will be discussed below. They are divided into:

- Wood names with an area-related prefix
- Wood names with a characteristic-related prefix

<sup>153</sup> Edwards, 2000, pp. 148–149.

<sup>154</sup> *Ibid.*, p. 25.



このプレビューでは表示されないページがあります。

## 4. TECHNICAL ASPECTS OF TRADITIONAL WOODWORKING

From the selection of the log, or *genboku*, to the completion of the artefact, or *seihin*, a series of working processes has to be carried out. These steps, each of which requires the highest degree of craftsmanship, jointly determine the final outcome of the piece. However much of a routine some of these processes may become, the artisan will still exercise deep reflection and careful judgment – habits acquired after numerous years of practice.

In the following sections three crucial woodworking manufacturing processes will be discussed: the choice of timber, its seasoning, and object-oriented cutting.

Choice of timber involves selecting the wood species appropriate for the object to be manufactured, as well as judging the quality of that timber.

Proper seasoning, or drying (*kansô*), of the wood is a time-consuming process but is essential to the successful creation of a wood product for it determines the workability of the wood and durability of the final object.

The working process which woodworkers themselves described as being the most difficult is *kidori*, or object-oriented cutting. A key process, it decisively determines an artefact's features and qualities.

Finishing techniques, meant to protect and embellish the surface of an artefact, have a great impact on the final object's character as well. They are discussed in Chapter 6, which gives a detailed description of wood aesthetics and the techniques used to enhance a wood's beauty.

### 4.1. The Choice of Timber

The choice of an appropriate wood species for an artefact determines that object's durability, as well as its special features and characteristics. Each woodworking field has at its disposal a range of wood species, each of which fulfills specific technical, economic, aesthetic, and symbolic criteria.

Technical criteria refer to those properties and qualities of wood which make it suitable for the various purposes for which it is required. Important properties are elasticity, durability, cleavability, flexibility, weight, and moisture content.<sup>189</sup>

Economic criteria are determined by the origin of the wood, its availability, its quality, and its price. Generally it can be said that objects intended for daily use are made of local wood, whereas sophisticated artefacts, such as utensils for the tea ceremony, are made of imported or precious indigenous wood. Based on its place of origin, wood belongs to one of the following categories:

---

<sup>189</sup> See Corkhill, 1979, p. 577.

このプレビューでは表示されないページがあります。

## 5. CULTURAL ASPECTS OF TRADITIONAL WOODWORKING

In addition to technical and aesthetic considerations, cultural aspects also influence wood selection and manufacturing. The wood species used in traditional Japanese woodworking are generally indigenous ones. Needless to say, the modern woodworker does have access to foreign wood species and in some cases resorts to them as substitutes for rare Japanese species. However, the Japanese woodworker still, on the whole, prefers indigenous species, and the reasons for this are interesting to consider.

In the case of Buddhist sculptors, woodworkers who make objects for a temple or shrine, and *miya-daiku*, a religious dimension plays a part in the selection of wood material. Various ceremonies related to the timber, the finished object, and to the manufacturing process are also involved.

At other times, important cultural properties such as the wooden objects in the Shôshô-in collection, or even well-known historical figures or events, provide the woodworker with inspiration. This imbues his creations with certain symbolic associations, recognizable to and appreciated by the connoisseur.

Three distinct cultural aspects, which have a considerable influence on wood selection and the manufacturing process, will be discussed in the following sections:

- Preference for indigenous wood
- Sacred aspects of wood
- Symbolic associations

### 5.1. Preference for Indigenous Wood

Most Japanese woodworkers value indigenous wood more than foreign wood. This preference must be seen as reflecting their appreciation of the properties of Japanese wood, especially those special technical or aesthetic qualities required by the woodworker's specific field.

With the exception Buddhist sculptor Eri Kôkei, the woodworkers interviewed all confirmed a preference for Japanese wood, although the reasons given varied from person to person. Some spoke in general terms, others gave precise examples. Some praised indigenous wood for its superior mechanical properties, while others praised its aesthetic qualities.

Carpenter Hirose Takayuki explained his preference for Japanese wood in just a few words, claiming that its quality is *chimitsu*, or especially fine, and that it hardly ever cracks.

#### 5.1.1. Earlywood and latewood

Sculptor Yano Kazuma was more detailed, pointing out the difference in hardness between earlywood and latewood and also explaining that Japanese wood warps less:

Compared to foreign wood, the difference between the hardness of *natsume* [earlywood] and *fuyume* [latewood] is relatively small in Japan. Take the example of pine or paulownia wood imported from foreign countries: the latewood is rather *kachi-kachi* [hard] while the earlywood is relatively *boku-boku* [soft]. This might be related to the climate. Wood from Japan also warps less. I'm not sure why, but in wood imported from northern countries

このプレビューでは表示されないページがあります。



## 6. AESTHETIC ASPECTS OF TRADITIONAL WOODWORKING

One of the most striking things about Japanese wooden artefacts is the amount of effort that has gone into bringing out the beauty of the wood grain. Great care has also been taken so that the grain balances harmoniously with the wood's colour and texture.

For each wood species, there are many ways in which colour, texture and grain can be shown to good advantage. The woodworker's choice of wood species determines the surface features of a wood. So, too, does his way of selecting and cutting the timber – a process called *kidori* – and his method of *shiage*, or surface finishing. Notably, the wood surface is sometimes left uncoated because the bare surface – the *shiraki* (literally, “white wood”) – is prized for its natural beauty. The outlines or shape of the artefact itself is often relatively simple – subordinate to, and thereby enhancing of, the beauty of the grain.

In order to understand the Japanese perception of wood, it is necessary to comprehend certain underlying aesthetic notions. What are the forces guiding these notions? What kind of rules or principles apply and to what do they refer?

A natural product, wood is considered aesthetically even before being processed. Many woodworkers appreciate the natural beauty of the raw material just as much as they do the enhanced beauty of a processed surface.

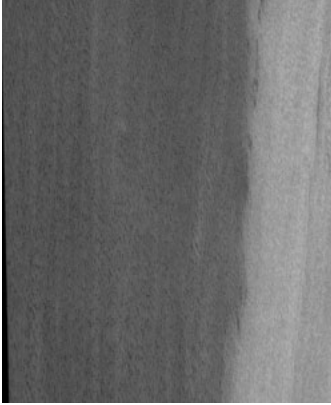
When interviewed, each woodworker was asked to describe his personal perceptions of the beauty of wood and to discuss his sensibility in regard to wood in general and to certain visual aspects, such as grain (*mokume*) and figuring (*moku*), in particular. He was further asked which techniques he used in order to express the beauty of wood in his work.

Most of the woodworkers were surprised by the questions. Some communicated their opinions spontaneously, while others needed time to reflect. It was interesting to note that they often described their feelings about wood using human attributes. Wood was often called “warm” and “vivid”. Ayabe Yuki, of the Kyôto-style fine cabinetmaking guild, straightaway compared trees with human beings, saying that buds in spring reminded him of the *seimeikan* (vitality) of young people.

A strong feeling evidenced towards wood was that of respect and responsibility. Ogura Masami, turner and a former woodcutter from Shiga Prefecture's Hirutani, expressed a strong feeling of diffidence and respect towards the trees he felled for personal use. This attitude was similar to Ayabe's fear of wasting wood and Yano Kasumi's fear of making an unworthy artefact, an act that he likened to causing the “death” of the wood.

Almost all the woodworkers interviewed demonstrated a deep feeling of respect and passion for wood and considered it to be alive. They said that in their work they wanted to bring out the wood's *aji* – a fundamental concept indicating a wood's intrinsic character or nature. To the woodworkers, each wood species has its own “personality”, made up of a combination of colour, texture, grain, and various other physical and mechanical properties. Well aware of the specific character of each wood species, they consider it their task to express this *aji* in their work.

このプレビューでは表示されないページがあります。



**Figure 113** Macroscopic view of the reddish-brown heartwood and the light coloured sapwood of jujube (*natsume*; *Zizyphus jujuba*).



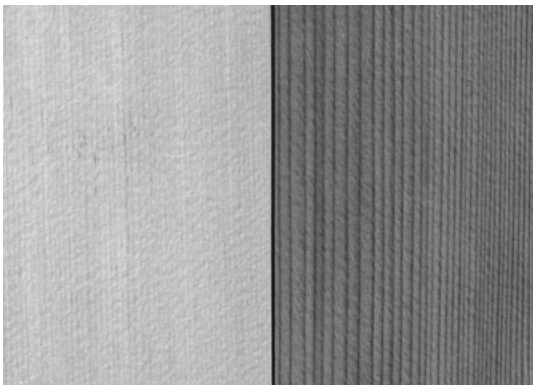
**Figure 114** Frog on a wisteria seedpod. Carved by Higashi Katsuhiro from a single piece of jujube (*natsume*; *Zizyphus jujuba*) wood, the frog is made from heartwood and the pod from sapwood. Takayama, Gifu Prefecture.

Height: 2.2 cm Width: 3.0 cm  
Length: 13.3 cm  
(Collection of Mechtild Mertz.)

while the light yellow seedpod was carved out of sapwood.

The following two examples concerning the colour of wood refer to two important wood species in Japanese culture – hinoki cypress and persimmon – both of which are appreciated for their colour, but in very different contexts.

Hinoki cypress wood has a predominant position in Japanese wood culture. In addition to its other qualities, it is appreciated for its white colour. When one compares it with other softwoods, such as Japanese cedar, the dark latewood part of its tree rings is rather narrow, making the wood look almost entirely light in colour (figure 115).



**Figure 115** Left: a piece of *hinoki*. Right: a piece of *sugi*.

*Bishû-hinoki*, the hinoki cypress from Nagano Prefecture's mountainous Kiso area, is particularly prized for its fine grain and white colour. Many woodworkers, including Buddhist sculptor Eri Kôkei, prefer using it.

In ancient times a large number of Buddhist images were made of hinoki cypress. The preferred material of Heian-Period Buddhist sculptors, it replaced *kusunoki* – Japanese camphor wood, which

このプレビューでは表示されないページがあります。

## Concluding Remarks

My hope is that this book has left the reader with a general understanding of the importance of wood and with a specific sense of its importance in Japan.

Currently Japan boasts many craftsmen actively engaged in the pursuit of traditional woodworking crafts. However, the majority of them are well-advanced in years, and, unfortunately, few young Japanese show an interest in carrying on the time-honored traditions of their fathers.

In spite of the role played by wood in cultural heritage and tourism, Japan does not always display a keen awareness of its importance. In the city of Kyôto, for example, which can claim seventeen temples and shrines designated World Heritage Sites, the destruction of wooden townhouses called *machiya* continues unabated, with 1,000 to 1,500 being demolished every year.<sup>333</sup>

Considering such facts, one can only wonder what the future holds for Japan's culture of wood. This concern gave added impetus to my research.

On the bright side, traditional crafts in Japan *do* receive government support. In this respect, Japan has the potential to serve as a role model for other countries, notably China, where traditional crafts are not the beneficiaries of such aid.

Also, the Research Institute for Sustainable Humanosphere (former Wood Research Institute) of Kyôto University, is an active center for, among other fields, wood research. Bringing together wood scientists, historians, archeologists, and craftsmen, it regularly hosts symposia on wood culture and science.

The core of this book is composed of the wealth of information yielded by the interviews that Professor Itoh Takao and I conducted with twenty-nine Japanese woodworkers. Through these interviews, I was allowed to go deep into the activities of traditional Japanese crafts and to understand things not easily accessible to a non-Japanese. In addition to granting me insights into the Japanese culture of wood, several of the artisans interviewed also became friends. I consider this to be one of the most gratifying results of my research.

---

333 Fiévé, 2008, p. 308.



このプレビューでは表示されないページがあります。

## Bibliography

### Western Languages

- ALLAN, Harry Howard, 1961 (1982), *Flora of New Zealand*, Vol. I: Indigenous Tracheophyta – Psilopsida, Lycopsidea, Filicopsida, Gymnospermae, Dicotyledons, Wellington: Government Printer, 1085 p.
- ALPHEN, Jan VAN (ed.), 1999, *Enkû, 1632–1695: Timeless Images from 17<sup>th</sup> Century Japan*, Catalogue, Antwerp: Etnografisch Museum, 192 p.
- ANONYMOUS, 1994, “Naturraum Japan” [Natural environment of Japan], *Allgemeine Forstzeitschrift für Waldwirtschaft und Umweltvorsorge* (AFZ), no.19, München: BLV Verlagsgesellschaft mbH, pp. 1032–1034.
- ARCHITECTURAL INSTITUTE OF JAPAN, Library Digital Archives, 2008 [[http://news-sv.aij.or.jp/da1/index\\_e.html](http://news-sv.aij.or.jp/da1/index_e.html)] (February 23, 2011)
- ASTON, William George (transl.), 1972 (reprint from 1896), *Nihongi – Chronicles of Japan from the Earliest Times to A.D. 697*, Rutland, Tōkyō: Charles E. Tuttle Company, 443 p.
- BÄRNER, Johannes, (in Cooperation with MÜLLER, Johann Friedrich), 1962 (1942–43), *Die Nutzhölzer der Welt: Botanische Nomenklatur, Botanische Beschreibung, Heimat und Verbreitung, Handels- und Eingaborennamen, Eigenschaften und Verwendung* [World timber: Botanical nomenclature, botanical description, origin and distribution, trade and vernacular names, properties and usage], Berlin-Dahlem, Neudamm, J. Neumann: 4 vols.
- BÄRTELS, Andreas, 1987, *Kostbarkeiten aus ostasiatischen Gärten* [Treasures of East Asian gardens], Stuttgart: Verlag Eugen Ulmer, 184 p.
- BERQUE, Augustin, 1986, *Le sauvage et l'artifice – Les Japonais devant la nature* [Wilderness and artificiality – The Japanese and nature], Paris: Gallimard, 314 p.
- BERTHIER, François, 1979, *Genèse de la sculpture bouddhique japonaise* [Origins of Japanese Buddhist sculpture], Aurillac: Publications orientalistes de France, 589 p.
- BOERHAVE BEEKMAN, Willem. (ed.), 1964, *Elsevier's Wood Dictionary in Seven Languages: English/American, French, Spanish, Italian, Swedish, Dutch, German*. Vol. 1: Commercial and Botanical Nomenclature of World-Timbers Sources of Supply; Vol. 2: Production, Transport, Trade; Vol. 3: Research, Manufacture, Utilization. Amsterdam, London, New York: Elsevier Publishing Company, 3 vols.
- BOULLARD, Bernard, 1988, *Dictionnaire de botanique* [Dictionary of botany], Paris: Ed. Marketing, 398 p.
- BROWN, William H., 1999 (1988), *The Conversion and Seasoning of Wood*, Hertford: Stobart Davies Ltd., 222 p.
- BUCKSCH, Herbert, 1966, *Dictionary of Wood and Woodworking Practice – Holz-Wörterbuch, English – German/ German – English*, Wiesbaden: Bauverlag GmbH, London: Sir Isaac Pitman and Sons Ltd., 2 vols.
- BURTE, Jean-Noël, (ed.), 1992, *Le Bon Jardinier* [The good gardener], Paris: La Maison rustique, 3 vols.
- COALDRAKE, William H., 1990, *The Way of the Carpenter: Tools and Japanese Architecture*, New York, Tōkyō: Weatherhill, 204 p.
- COALDRAKE, William H., 1996, *Architecture and Authority in Japan*, London, New York: Nissan Institute/Routledge Japanese Studies Series, 337 p.
- COLLCUTT, Martin, JANSEN, Marius, KUMAKURA, Isao, 1989 (1988), *Atlas du Japon* [Atlas of Japan], Paris: Editions Nathan, 240 p.
- CORKHILL, Thomas, 1979, *A Glossary of Wood*, London: Stobart & Son LTD, 656 p.
- DA LAGE, Antoine, MÉTAILLÉ Georges, 2000, *Dictionnaire de Biogéographie végétale* [Dictionary of plant biogeography], Paris: Editions du CNRS, 579 p.

このプレビューでは表示されないページがあります。

## Appendices

Appendix 1 Names, Sizes, and Distributions of Japanese Timber, Trees, and Plants

Appendix 2 Scientific Names of Tree and Plant Species Mentioned in the Text

Appendix 3 Physical and Manufacturing Properties

## Notes

Appendix 1 Names, sizes, and distributions of Japanese timber, trees, and plants:

The following table presents in alphabetic order names of Japanese timber, trees, and plants mentioned in this book. In the first column, the standard vernacular name is printed in bold letters, whereas the other vernacular names are printed in normal Roman text.

The following columns show from left to right the Japanese *kanji* or character<sup>1</sup>, the scientific name with the “author’s name”, the English, French, and German vernacular names, and the height of the living tree. In the last column each tree species is geographically described by a rough sketch of its distribution areas.

The *Nihon no yasei shokubutsu – mokuhon/Wild Flowers of Japan – Woody Plants*<sup>2</sup> served as my reference source for Japanese vernacular names and for scientific names. *Makino’s New Illustrated Flora of Japan*<sup>3</sup> is useful for comparison, but I consider the former to be the authoritative source.

The English, French, and German vernacular names have been culled from the following reference books. The first letter(s) of their author’s name or the work’s title appear after the non-Japanese tree name so that the reader can trace the reference.

### English, French, German, and Japanese tree names:<sup>4</sup>

- BÄRNER (1962) **B**
- BOERHAVE BEEKMAN (1964) **BB**
- ZANDER (*et al.* 2000) **Z**
- QUATTROCCHI (2000) **Qu**
- UEHARA (1961) **U**
- VAUCHER (1986) **V**

<sup>1</sup> Japanese scientists only use katakana for the Japanese tree and plant names.

<sup>2</sup> Satake *et al.*, 1989.

<sup>3</sup> Makino, 1989.

<sup>4</sup> Boerhave Beekman, Zander and Vaucher do not list Japanese names.

このプレビューでは表示されないページがあります。



## Glossary of Wood and Woodworking

\* Terms with an asterisk are supplementary and do not appear in the text.

Japanese	English	French	German
abura, yari	resin, grease, fat	résine, graisse	Harz, Fett
abura	oil	huile	Öl
aburake	resinousness, greasiness	teneur en résine, qualité de ce qui est gras	Harzgehalt; Fettigkeit
aburake	oiliness	qualité de ce qui est huileux, teneur en huile	Ölgehalt
aji, ajiwai (ki no)	a wood's character	caractère spécifique, nature véritable (du bois)	spezifische Eigenschaften (eines Holzes)
akami, shinzai (↔ shirata, henzai)	heartwood, duramen (↔ sapwood)	duramen, bois de coeur, bois parfait (↔ aubier)	Kernholz (↔ Splintholz)
aku	lye, harshness, disagreeable quality	lessive de cendres, suc astringent de certaines plantes, goût désagréable	Gerbstoffe, Lohe (altd.), herber Geschmack, ungünstige Eigenschaften
ame-iro	amber colour	couleur ambrée	bernsteinfarben
ami-moku	"net" figuring	motif ou figure du bois en forme de "filet"	"Netz" - Maserung
amimono	object made by weaving wooden strips	structure tressée, lamelles de bois en treillis	Flechtwerk aus Holzspan
arabori	rough carving	ébauche	grobes Schneiden, zureichten, vorarbeiten, grob ausformen
aradori	roughing gouge, chisel for rough turning	gouge à dégrossir	Schruppstahl, Schruppeisen (zum Drechseln)
arai	rough, coarse	grossier	rauh, grob
ara-kezuri	rough planing, levelling	raboter, dégauchir	abrichten
arigumi*	dovetail joint	assemblage en queue d'aronde	Schwalbenschwanzverbindung, Zinkung
asshuku-atezai	compression wood	bois de compression	Druckholz
atezai	reaction wood	bois de réaction	Reaktionsholz
banzai (↔ sōzai)	latewood, (summerwood) (↔ earlywood)	bois final, (bois d'été) (↔ bois initial)	Spätholz (↔ Frühholz)
benitō-bako	lunch box	boîte à <i>benitō</i>	<i>Benitō</i> -Schachtel, Frühstückskästchen
betsumei	vernacular name, non-standard name	nom vernaculaire	einheimischer Name
biwa*	<i>biwa</i> , Japanese lute	<i>biwa</i> , luth japonais	<i>Biwa</i> -Laute, japanische Laute
bon	tray	plateau	Tablett
bu	1/100 of a <i>shaku</i> , 1/10 of a <i>sun</i> =0.3 cm	1/100 d'un <i>shaku</i> , 1/10 d'un <i>sun</i> =0.3 cm	1/100 eines shaku, 1/10 eines <i>sun</i> =0.3 cm
budō-moku	"grapes" figuring	motif en "grappe de raisin"	"Trauben"- Maserung
bushhi	sculptor of Buddhist images	sculpteur d'images bouddhiques	Bildhauer buddhistischer Skulpturen
butsumō	Buddhist sculpture	sculpture bouddhique	Buddhistische Skulptur

このプレビューでは表示されないページがあります。

## Index

### A

abacus (*soroban*) 87  
*abura* (resin) 80  
*abura* (oil) 154  
*aburasugi* (David's fir) 80, 95  
 adze (*chôna*) 61, 151  
 agricultural tools (*nôgu*) 13  
 air permeability (*tsûkisei*) 77, 154  
 air seasoning (*shizen-kansô*, *tennen-kansô*) 103  
 Aizu giri 80  
*aji* [*ki no*] (a wood's character) 114, 135, 151, 153  
*akagashi* (Japanese evergreen oak) 13; Table 5  
*akamatsu* (Japanese red pine) 23, 27, 73, 80; Table 5  
*akami* (heartwood) 29, 36; figures 3–4  
*Akita-sugi* (Akita cedar) 76–77  
*aku* (lye) 105  
 alcove floorboard (*toko-ita*) 13  
 alcove pillar (*toko-bashira*) 79, 96, 99  
 alder (*yashabushi*) 159  
 alder finishing (*yasha-shiage*) 158–159  
 amber-colour (*ame-iro*) 105, 138  
*ame-iro* (amber-colour) 105, 138  
*amimono* (weaving with wooden strips) 43  
 Amur cork-tree (*kihada*) 34  
 ancient literature (*koten*) 86, 100, 121–123, 126  
*Aomori-hiba* (*hiba* arborvitae, *hiba*) 65, 97; figure 45, Map 11  
 aphananthe (*mukunoki*) 158  
*Ashi'u-sugi* (*Ashi'u* cedar) 77  
*arabori* (rough carving) 55, 57  
*aradori* (gouge for rough turning) 62; figure 43  
*arakashi* (green oak) 13, 37; Table 5  
*ara-kezuri* (rough planing) 49  
 argillaceous earth powder (*tonoko*) 159  
 aromatic wood (*kôboku*) 95, 119  
 aloe wood (*jinkô*) 95  
*asshuku-atezai* (compression wood) 113  
*asunaro* (*hiba*) 25, 40, 53, 63, 70, 84; Table 5  
*atezai* (reaction wood) 113  
 axe (*ono*) 61

### B

“bamboo grass” figuring (*sasa-moku*) 78, 144;

figures 71, 73  
 bamboo-leaved oak (*shirakashi*) 13; Table 5  
 “bamboo shoots” figuring (*takenoko-moku*) 33, 140, 144  
 bandoline wood (*tabunoki*) 13, 35; Table 5  
 banned trees (*chôjiboku*) 84  
*banzai* (latewood) 31, 117; figure 4  
 bare-wood finish (*kiji-shiage*) 63, 154  
 bark (*juhi*, *gai-juhi*) 28–29; figures 3–4  
 base surface to which lacquer is applied (*nurishita*) 56, 63  
 basket for steaming (*seirô*) 46, 64; Map 8  
 bead tree (*sendan*) 74; Table 5  
 bending-roller (*magegoro*) 67  
*beni-hi* 82  
*benimatsu* (Korean pine) 27–28, 80–81  
 bentwork (*magemono*) 19, 43, 46–47, 64, 97, 113, 152; Map 8  
*betsumei* (vernacular name, non-standard name) 21, 25  
 bigleaf podocarp (*inumaki*) 53, 100  
*Bishû hinoki* 79–80, 84  
 birds-eye figuring (*chôgan-moku*) 35, 144  
 blank (*genzai*) 61  
 blank situated horizontally in the log (*yokokiji*); figure 36  
 blank situated vertically in the log (*tatekiji*) 60; figure 36  
 bracket arm (*hijiki*) 127  
 broad-leaved tree (*kôyôju*, *katsuyôju*) 83, 87; Table 11  
 brushing technique (*uzukuri*) 153, 158–159; figure 126  
 Buddhist altar (*butsudan*) 122  
 Buddhist sculpture (*butsuzô*) 15, 17–18, 43, 57, 86, 94, 97, 107, 112, 120–125, 143, 149, 162  
*budô-moku* (“grapes” figuring) 34  
*buna* (Japanese beech) 10, 14, 95  
 buried Japanese cedar (*jindai-sugi*) 81, 85–86, 95; Table 14  
 buried wood (*umoregi*) 86, 95  
*busshi* (sculptor of Buddhist images) 17, 122–123  
*butsudan* (Buddhist altar) 122  
*butsuzô* (Buddhist sculpture) 15, 17–18, 43, 57, 86, 94, 97, 107, 112, 120–125, 143, 149, 162  
*byakudan* (sandalwood) 57, 86–87, 120, 162

このプレビューでは表示されないページがあります。

---

Second Edition

## Wood and Traditional Woodworking in Japan

---

発行日 ————— 2011 年 3 月 30 日 初版第 1 刷  
2016 年 3 月 1 日 第 2 版第 1 刷  
定 価 ————— カバーに表示してあります  
著 者 ————— Mechtild Mertz (メヒティル・メルツ)  
発 行 者 ————— 宮 内 久



**海青社**  
Kaiseisha Press

〒520-0112 大津市日吉台2丁目16-4  
Tel. (077) 577-2677 Fax (077) 577-2688  
<http://www.kaiseisha-press.ne.jp>  
郵便振替 01090-1-17991

---

● Copyright © 2016 ● ISBN978-4-86099-323-8 C3072 ● Printed in JAPAN  
● 乱丁落丁はお取り替えます

本書のコピー、スキャン、デジタル化等の無断複製は著作権法上での例外を除き禁じられています。本書を代行業者等の第三者に依頼してスキャンやデジタル化することはたとえ個人や家庭内の利用でも著作権法違反です。